Regional Operational Plan CF.4K.2014.14

Chignik River Sockeye Salmon Escapement and Genetic Stock Identification Sampling Operational Plan, 2014

by

Charles W. Russell

And

M. Birch Foster

April 2014

Alaska Department of Fish and Game **Divisions of Sport Fish and Commercial Fisheries**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

Weights and measures (English)

cubic feet per second	ft^3/s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

Alaska Administrative Code	AAC
all commonly accepted abbreviations	e.g., Mr., Mrs., AM, PM, etc.
all commonly accepted professional titles	e.g., Dr., Ph.D., R.N., etc.
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures): first three letters	Jan,...,Dec
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	*E*
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
probability	P
probability of a type I error (rejection of the null hypothesis when true)	α
probability of a type II error (acceptance of the null hypothesis when false)	β
second (angular)	"
standard deviation	SD
standard error	SE
variance	
population	Var
sample	var

REGIONAL OPERATIONAL PLAN CF.4K.2014.14

CHIGNIK RIVER SOCKEYE SALMON ESCAPEMENT AND GENETIC STOCK IDENTIFICATION SAMPLING OPERATIONAL PLAN, 2014

By

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SIGNATURE PAGE

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Project Leader(s):	*Charles Russell, Fishery Biologist II* *M. Birch Foster, Fishery Biologist III*
Division, Region, and Area:	Division of Commercial Fisheries, Region IV, Kodiak
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Plan Type:	Category II

Approval

Title	Name	Signature	Date
Project Leader	Charles Russell		4/8/14
Project Leader	M. Birch Foster	M. Birch Foster	4/8/14
Section Supervisor	Jeff Wadle		4/8/14
Biometrician	Dave Barnard	David R. Barnard	9 Apr 2014

TABLE OF CONTENTS

Page

LIST OF FIGURES

Figure **Page**

LIST OF APPENDICES

Appendix **Page**

ABSTRACT

The Alaska Department of Fish and Game samples sockeye salmon *Oncorhynchus nerka* at the Chignik River weir for age, sex, and length (ASL) determination to provide information for preseason run forecasts, escapement goal evaluation, and run reconstruction. Every week throughout the season, 240 sockeye salmon are sampled. Sockeye salmon scales are collected using established protocols common to the Westward Region. Additionally, in order to achieve escapement goals for the Black Lake and Chignik Lake sockeye salmon stocks simultaneously, as well as maximize surpluses available to subsistence and commercial harvesters, inseason estimates of the proportion of each stock in the daily escapement to the Chignik River are required. Genetic stock identification can be used to identify the proportion of Black Lake early run and Chignik Lake late run fish as they pass the Chignik River Weir. During 2014, fin clips will be taken from sockeye salmon caught in the Chignik River weir trap and preserved in ethanol. Samples will be expedited to the Gene Conservation Laboratory in Anchorage for inseason analysis.

Key words: Chignik Management Area, escapement, sockeye salmon, scale samples, ASL, 2014 management, genetic stock identification, sampling, Black Lake, Chignik Lake

INTRODUCTION

The Chignik Management Area (CMA; Area L) includes all coastal waters and inland drainages on the south side of the Alaska Peninsula between Kilokak Rocks and Kupreanof Point (Figure 1). The CMA is bordered by the Alaska Peninsula Management Area (Area M) to the west and the Kodiak Management Area (Area K) to the east. The CMA is divided into five districts: the Eastern, Central, Chignik Bay, Western, and Perryville districts (Figure 2). These districts are further broken down into sections and statistical reporting areas (Figure 2). The Chignik River system is the largest sockeye salmon *Oncorhynchus nerka* producer within the CMA. The Chignik weir and Alaska Department of Fish & Game (ADF&G) field office facility is located three miles upriver from the Chignik Lagoon.

There are primarily two runs of sockeye salmon that spawn in the Chignik River watershed. The majority of the early-run enters the Chignik watershed in June and July and ascends to Black Lake and its tributaries (Narver 1966). The late run enters the Chignik watershed between mid June and September and spawns primarily along the beaches and tributaries of Chignik Lake. There is substantial temporal overlap of the two runs each year during late June and early July, and the actual proportion of each run within the overlap is undefined. In order to protect harvest levels and ensure future run productivity, inseason management of each stock is required to accurately meet each run's escapement goal.

To achieve escapement goals for the Black Lake and Chignik Lake stocks simultaneously, as well as maximize surpluses available to subsistence and commercial harvesters, inseason estimates of the proportion of each stock in the daily escapement to the Chignik River are required. Prior to 1980, time-of-entry relationships based on tagging studies and age groups were employed to divide the catch and escapement between the two runs. From 1980 to 2003, with the exception of 1982, stocks were separated using scale pattern analysis (Witteveen and Botz 2004). Beginning in 2004, an estimate of the total escapement of the Black Lake early-run sockeye salmon was based on weir counts through July 4. After July 4, the fish that passed upstream through the weir were assumed to be Chignik Lake late-run sockeye salmon (Witteveen *unpublished memorandum*)[1]. Beginning in 2010, genetics were used to separate the early- and late-run stocks, but not until 2013 were results quantified inseason. In comparison to the current

[1] Witteveen, M. J. unpublished memorandum. Chignik River inseason run apportionment. Alaska Department of Fish and Game, Kodiak memorandum addressed to Denby S. Lloyd, dated May 28, 2004.

management early/late switch date of July 4, logistic run timing during the overlap period suggest that utilizing inseason genetic information would result in more biologically sound escapement-based management (Anderson et al. 2013).

Annually, ADF&G samples sockeye salmon from the Chignik River escapement for biological characteristics (age, sex, and length; ASL). These samples provide the foundation for preseason run forecasts, escapement goal evaluation, and accurate assignment of the run to stock of origin (run reconstruction). In 2014, in addition to ASL, genetics will be collected during the overlap period to estimate the stock proportions of early- and late-run sockeye salmon passing the weir and will be determined inseason to assist management of the fishery. Therefore, it is important that all data are collected following established protocols.

GOAL

The goal of this project is to collect ASL composition data and genetic samples from sockeye salmon escapement at the Chignik River weir that will be used to assist with commercial fishery management and mixed-stock analysis.

OBJECTIVES

1. Collect a random sample of 240 sockeye salmon per statistical week for ASL data at the Chignik weir.
2. Collect genetic tissue samples from 190 individual sockeye salmon passing the Chignik River weir once every four days during the overlap time period between the early and late run. The sampling period will occur approximately June 29 through July 11 totaling 5 strata, but may extend to July 15 if necessitated by late time.
3. Collect a random sample of 1,200 sockeye salmon from the outlet of Black Lake for ASL data.

SUPERVISION

Charles Russell is the Assistant Area Management Biologist for the Chignik Management Area and will oversee inseason sampling at the Chignik River weir and serve as the lead project biologist. The project biologist will schedule and monitor Chignik weir and Black Lake sampling, ensure data quality, quantity and timeliness, determine the age of all sockeye salmon scales, and provide feedback to the sampling crew as well as research staff regarding project progression and quality. A logbook will be maintained by the project biologist tracking weekly samples. M. Birch Foster is a finfish research biologist in the Westward Region and will oversee project progress inseason and along with the Chignik Area Management Biologist, Todd Anderson, analyze stock composition estimates both in and post season.

PROCEDURES

SOCKEYE SALMON

Escapement Sampling

A fish trap incorporated into the Chignik River weir will be used to capture fish for ASL sampling. Sockeye salmon will be randomly sampled from the trap for ASL data using methods described in Appendices A1 through A7. When possible, all scales will be collected from the preferred area of each fish following procedures outlined by the International North Pacific

Fisheries Commission (INPFC) (INPFC 1963). It is essential that samples be representative of the escapement and unbiased by not pre-selecting fish based upon size, sex, condition or any other factor.

During 2014, the sampling weeks start on Saturday and end the following Friday. When possible, 80 sockeye salmon will be sampled for ASL data per sampling event on alternating days (e.g., Saturday, Monday, Wednesday), totaling 240 ASL samples per statistical week (Thompson 1987). Sampling weeks and corresponding calendar dates are listed in Appendix A4. These data will be clearly marked as "Chignik weir escapement samples" (location code 071; Appendix A3).

If escapement numbers decline and there is concern that the minimum sample size will not be achieved, adjustments in sampling efforts should be implemented so that the weekly goal of 240 samples is met. The camera gates installed in the Chignik River weir may be closed during the operation of the fish trap to increase the number of fish captured in the weir's fish trap. When the trap catch at the Chignik River weir is not adequate to fulfill ASL sampling needs, additional samples may be collected from the Chignik Lagoon commercial harvest (statistical area 271-10). These data will be clearly marked as Chignik commercial catch samples (location code 072; Appendix A3). At the start of each season, the project leader will train new technicians and review training for returning technicians in ASL and tissue sample collection from sockeye salmon at the Chignik River Weir.

Genetic Sampling

On days when genetic tissue collection is scheduled to occur (Appendix B1), paired non-lethal tissue samples and ASL samples will be collected from 190 fish by the crew. An axillary process will be clipped from each sockeye salmon and placed in ethanol in an individually labeled cryovial (Appendix B2). When possible, all scales will be collected from the preferred area of each fish following procedures outlined by the International North Pacific Fisheries Commission (INPFC) (INPFC 1963). All scales will be aged by either the Chignik Area Management Biologist or the Assistant Area Management Biologist at the Chignik River weir facility, following designation criteria established by Mosher (1968).

All samples will be recorded on the *Chignik Inseason GSI Sampling Form* (Appendix C1). Samplers must be careful to track the fish number on the scale card and the scale card number and make sure they are aligned with the proper cryovial number for fin clip samples. In 2014, samples will be shipped via PenPak or Lake Clark Air to the ADF&G Gene Conservation Laboratory in Anchorage on the day of collection or as soon as possible if weather constraints prevent shipment on the sampling day.

If escapement numbers decline and there is concern that the minimum sample size will not be achieved, adjustments in sampling efforts should be implemented so that the daily goal of 190 is met. The camera gates installed in the Chignik River weir may be closed during the operation of the fish trap to increase the number of fish captured in the weir's fish trap.

Black Lake Sampling

Adult sockeye salmon will be sampled, beginning June 20, at the outlet of Black Lake. These samples provide a representation of the ASL composition of the early run. Sampling effort and coordination will be led by the project biologist with support from Chignik management staff. If possible, 1,200 sockeye salmon will be sampled over several days with a goal of at least 400 fish

each sampling day. The fish will be collected using a beach seine, and held in an instream live box prior to sampling. The adipose fin will be clipped on all sampled fish to prevent repeat sampling. Fish will be sampled using methods outlined in Appendices A1 through A7. These samples will be clearly marked as "Black Lake escapement samples" (location code 070; Appendix A3).

SAMPLE PROCESSING

Scales will be mounted on scale "gum" cards and impressions made on acetate/diacetate cards using a heat press. The Assistant Chignik Area Management Biologist will assign sockeye salmon ages by examining scale impressions for annual growth increments using a microfiche reader fitted with a 48X lens following designation criteria established by Mosher (1968). All data will be recorded on a Meazura MEZ1000 Rugged Digital Assistant as outlined in Appendix A1. All sockeye salmon scales, scale cards, and digital files will be delivered to finfish research biologist Michelle Moore in Kodiak for analysis and archiving. Data collected as part of this project will be reported in ADF&G reports in the fall of 2014.

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FIGURES

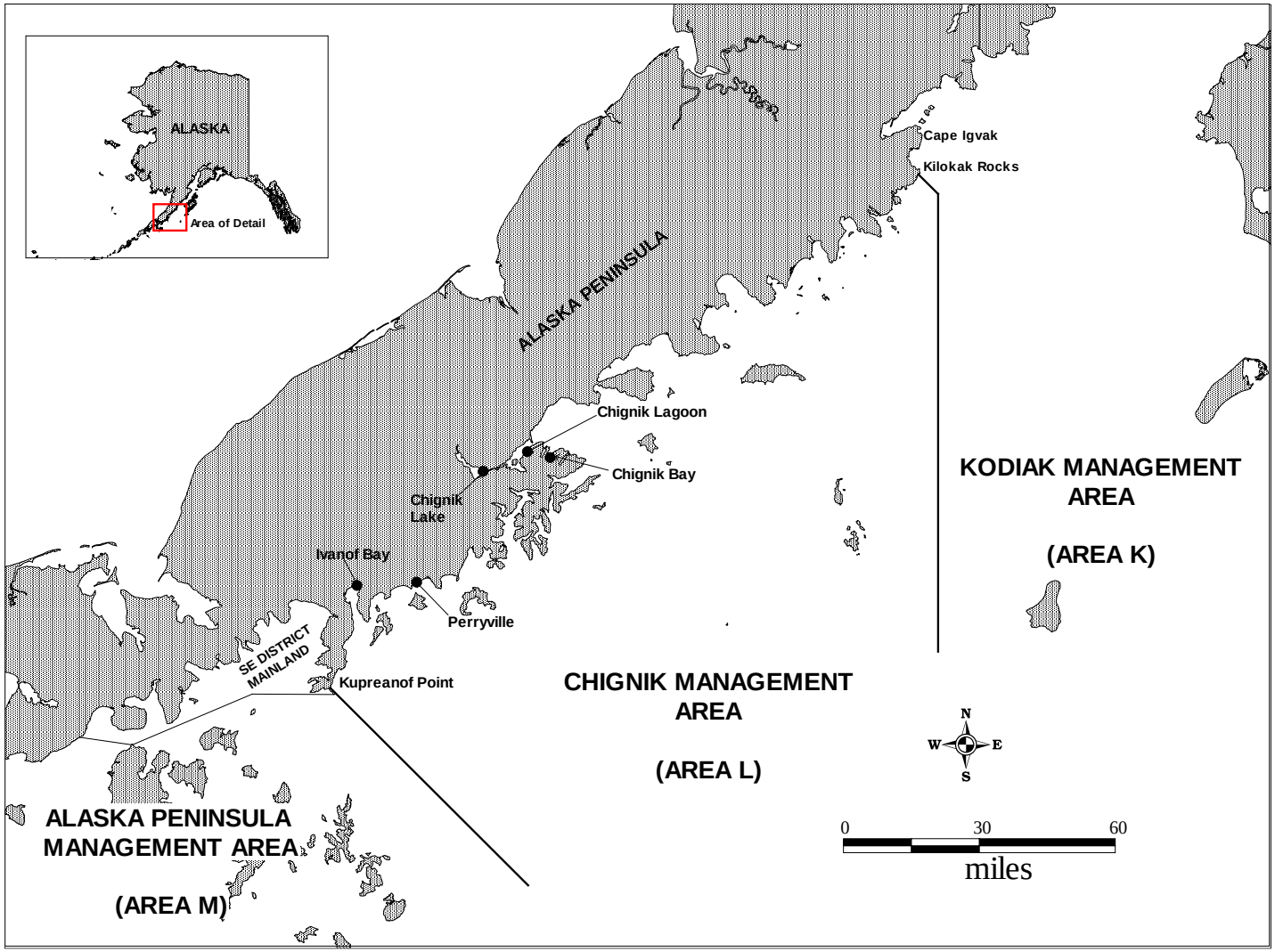


Figure 1.–Map of the Alaska Peninsula illustrating the relative locations of the Chignik, Kodiak, and Alaska Peninsula Management Areas.

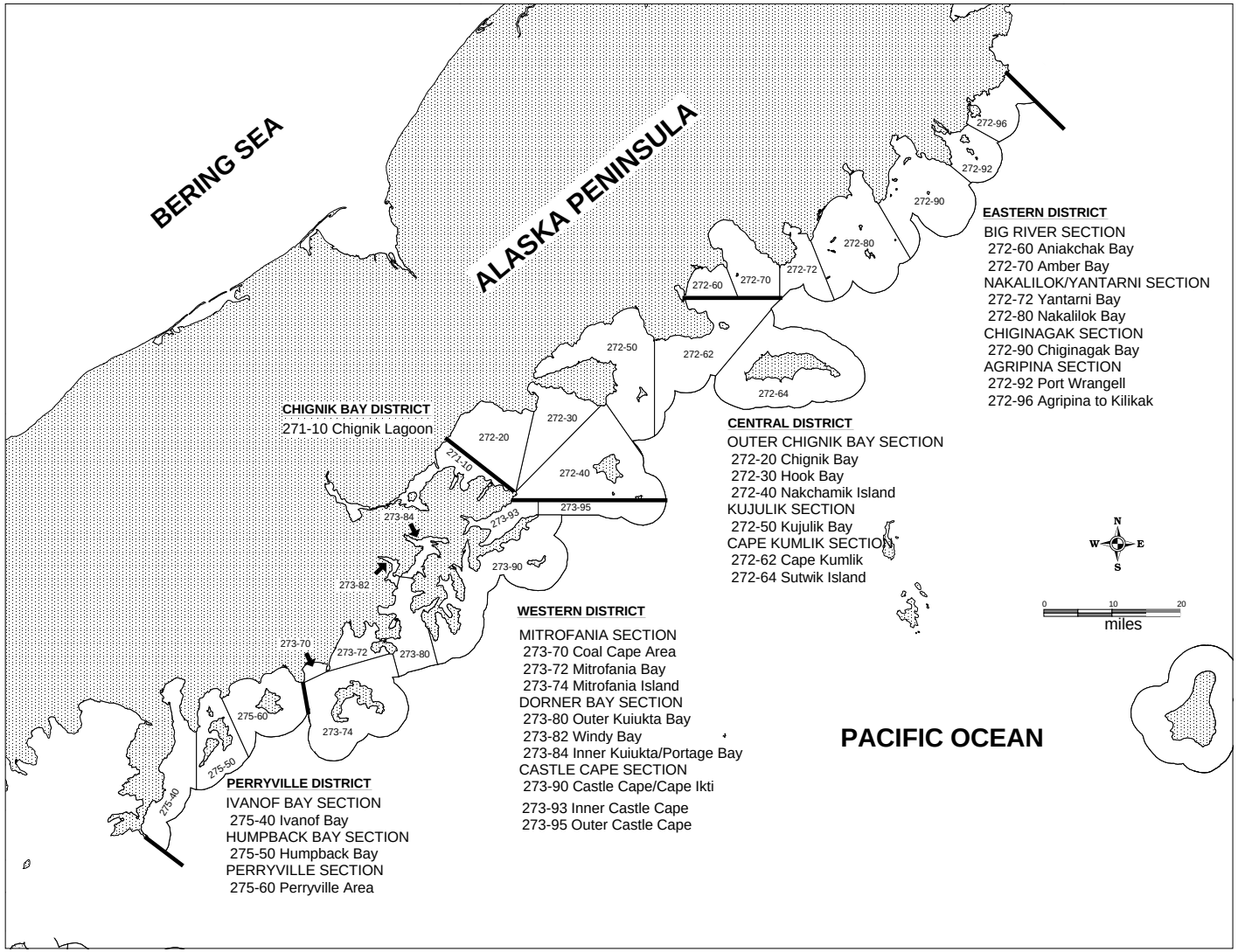


Figure 2.–Map of the Chignik Management Area illustrating commercial salmon fishing district boundaries and statistical areas.

APPENDIX A. ADULT SALMON SAMPLING

Annually, salmon escapements and catches are sampled for age (scales), length, and sex by field crews throughout the State. The database that results from these samples is essential for sound management of the State's salmon resources.

Data obtained while sampling is recorded completely and accurately using the Meazura MEZ1000 Rugged Digital Assistant (RDA). The RDA is a waterproof Palm Powered™ device used to digitally record sampling data. Sample information is transferred from the device to a small computer, also known as a netbook, after each sample. A USB flash drive is used to save and transport data from the netbooks located in field camps, to the office periodically throughout the season. An RDA is shown in Appendix A2.

Scale samples corresponding to the fish entered into the RDA are collected and mounted properly onto scale cards (also known as gum cards) to ensure accurate age determination (Appendix A3, A5–A7).

The following procedures are to be strictly adhered to when sampling adult salmon for age, length, and sex.

SAMPLING CHECKLIST

OPERATIONAL PLAN	PENCILS (NO. 2)
GUM CARDS	FORCEPS
RDA (case and accessories)	PLASTIC CARD HOLDERS
NEOPRENE WRISTERS	CLIPBOARD
MEASURING BOARD	LOG BOOK (Rite-in-the Rain)
NETBOOK (and accessories)	USB FLASH DRIVE(in RDA case)

PROCEDURES

ENTERING DATA INTO THE RDA:

To begin using the RDA, turn it on by pressing the power button  . Using the stylus, tap the home icon in the bottom portion of the screen  . This will bring up the main menu. It may be necessary to press the home icon several times to bring up the entire main menu. Next, tap the Forms 5.1 icon 

. The Pendragon Forms screen will appear. If a form was left open, it may be necessary to hit the Quit or Done button to get to the main list of forms. Highlight the appropriate sampling form (ASL_7.25) and select *New* which is found in the lower left corner of the screen. At this point, the four main buttons of the form will be visable Enter Background Info, Sample Next Fish, Review, and Quit) and are explained below.

-continued-

Enter Background Info

The information entered in this section of the form was formerly the header information on OPSCAN forms. Background information must be entered at the start of each sampling event. A new day always constitutes a new sampling event, so it will be necessary to enter new background information at least once per sampling day. It is important to edit background information when any change in sampling information occurs. A change in sampling crew, gear, or location would all require an update to the background information. Background information changes correspond with the use of a new scale card. The following topics constitute sampling information. To reiterate, any time information in one of the below categories changes, it is necessary to change the background information. To change the background information, simply click the Enter Background Info button.

Species

Select the appropriate species from the drop down list on the RDA, such as Sockeye.

Project

Indicate the pertinent project from the dropdown list. For example, if sampling adult sockeye escapement at a weir, choose Escapement.

Management Area

Choose the relevant management area from the dropdown list. Samples collected from Kodiak Island must have Kodiak selected as the proper management area.

Area Sampled

Select the area that best represents where the fish were sampled, such as Chignik River, from the dropdown list.

Location Type

Indicate the type of area in which the fish were sampled. For example, if the fish were sampled at the Upper Station weir, choose Weir from the drop down menu. Additional options for location types include lake, river, lagoon, THA, smolt pen, and specific canneries.

Gear

Select the type of gear in which the fish were caught, such as Trap.

Type of Length Measurement

Designate the type of length measurement taken. Adult salmon lengths are typically measured from Mid-eye to fork-of-tail, refer to Appendix A5.

Date of Sample

Escapement sampling: Use appropriate digits for the date the fish are sampled, such as 6/27/11.

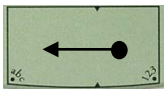
Catch sampling: Use the date the fish were caught, even if this differs from the sample date.

Sampler Initials

Enter the initials of the sampling crew (up to 3 persons). This can be done by writing in the box on the bottom of the screen, or by using the pop up keyboard.

-continued-

Notes:

1. When entering text, tap on the dot by the abc icon to bring up a keyboard. 
2. To delete a character, place the stylus in the text box and draw a small straight line from right to left. 

Sample Next Fish

After entering background information the RDA is ready to collect detailed fish data. The Sample Next Fish button is used to enter the details of each fish sampled. It is not necessary to click on the Sample Next Fish button when entering the first fish of a new sample. After entering the background information, the form automatically knows to go to the sample next fish section of the form. If entering the second fish of a sample, simply tap Sample Next Fish or Next to enter fish data. This option is used when continuing to the next fish of a sample where no background information has changed. Fish data that is entered here is associated with the last background information logged. The following constitute fish data and should be entered for each fish.

Scale Card Number

Scale (gum) card(s) are numbered sequentially by date throughout the season starting with 1. A separate numbering sequence will be used for each species, district, and geographic location. Consult your crew leader for the current card number. It is crucial to make sure the number written on the scale card matches the scale card number entered into the RDA. The Scale card number will automatically advance to next number after fish number 40 is recorded.

Fish Number

The fish number is the number of the fish on a particular scale card. This must be a number between 1 and 40. By default, the fish number in the RDA will automatically advance after each fish is sampled. It will also automatically go from 40 to 1.

Sex

Select the sex of the fish, such as Female; if unsure choose unknown.

Length in mm

Enter the length of the fish from mid eye to tail fork in millimeters, such as 534. **If for some reason you do not get a length, enter 999.**

Fin Clip and Tag Color

Select the Skip Fin Clip and Tag Color button if appropriate.

Fin Clip

Indicate the type of fin clip observed (e.g., axillary process) using the drop down menu, then press Next.

Tag Color

Select the appropriate tag color using the drop down menu.

-continued-

Select Sample Next Fish to continue sampling.

Review

The review button can be a very useful tool during sampling. It can be used to ensure data being entered is accurate, or it can be used for editing fish data during a sample. The review portion of the form displays card number, fish number, sex, and length. The most recently sampled fish appear first. To enter the review screen, tap on the Review button on the main screen of the form. After the data has been reviewed and edited tap the Done button on the bottom right of the screen to return to the main screen of the form. If Sample Next Fish is selected after leaving the review screen, the auto-increment will continue as if the review screen was never entered.

Reviewing Data

To review the last data entered tap the Review button on the main screen of the form. Use the scroll bar on the right side of the screen to look at the fish that have been entered.

Editing Data

If a fish needs to be edited, tap it using the stylus. Tap on the Sample Next Fish button to go through the fish data that was previously entered for that fish. Changes can be made as needed. Buttons chosen prior to the review are highlighted with asterisks. After a fish has been edited, the main review screen appears. If a fish is accidently selected from the main review screen, click the button that has the Card#-Fish# to return to the main review screen without going through the fish data. As mentioned above, tap Done to exit the review portion of the form and return to the main screen.

Quit

When sampling is complete, tap Quit to exit the form.

BACKING UP AND DOWNLOADING DATA – TO BE DONE DAILY ON SAMPLING DAYS

After sampling is done for the day, the data must be backed up on the RDA itself and then transferred to the netbook.

Backing up data**:**

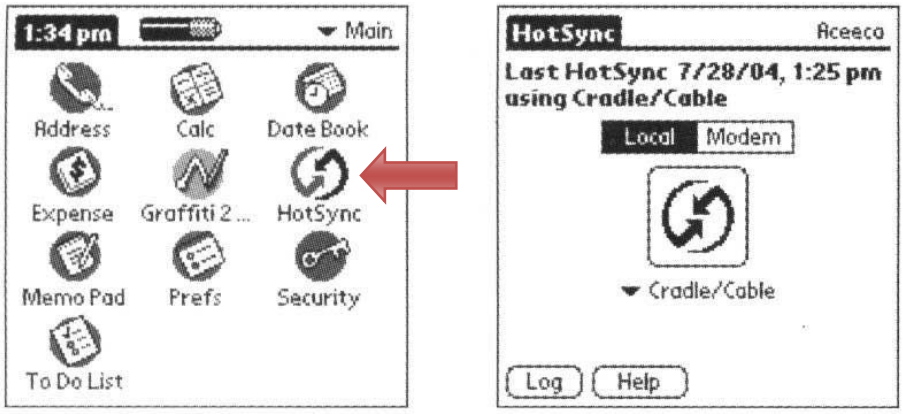
There are two compact flash drives located in the RDA unit. Each night the RDA should be backed up so that data is stored on both of the compact flash drives. Turn the RDA on, and tap the home icon in the bottom portion of the screen to bring up the main menu. Tap the CardBkup icon, and then the Backup Now button at the top left of the screen. The data will now be on both flash drives.

-continued-

Downloading Data to Netbook:

The RDA must be COMPLETELY DRY before downloading data from the RDA to the netbook. Connect the communications cable into the RDA and into one of the USB ports on the netbook. Press the power button to turn on the RDA and begin a HotSync by tapping the home icon, and then the HotSync icon found on the main menu. Tapping the large icon in the center of the screen will start the HotSync operation (Figure 1). The HotSync transfers the data to the netbook.

Figure 1: HotSync Screens Found on Meazura RDA



EDITING, NAMING, AND SAVING DATA

If a mistake is realized during the sample it can be changed using the review portion of the form. Data can also be changed after it is downloaded onto the netbook using notes from the field logbook. A HotSync operation after changes have been made on the netbook will update the RDA.

To view data open Pendragon Forms Manager (a shortcut should be located to the right of the start menu). Select the form (ASL_7.25), and click Edit/View under Data Functions on the right side of the window. All data will now be visible. Simply make the necessary changes here and exit out of the window to save. Columns that begin with or have the word "review" in the title should be ignored. A HotSync will update the RDA with the changes you have made on the netbook.

After data has been edited and verified, a copy of the database will need to be exported from the Pendragon software and saved on the netbook. In Pendragon Forms Manager under Data Functions on the right side of the window click To ASCII. Navigate to the D drive (D:), PendragonForms folder, and then the Data folder found within PendragonForms. Type in the file name and then save. The file name should follow this format: Area_Sampled_YYYYMMDD.csv (e.g., Afognak_River_20100514.csv). After saving, a window will pop up stating the file has been created. Each .csv file will contain all of the data that has been collected up to that point in the season.

-continued-

TRANSFERRING DATA FROM NETBOOK ONTO USB FLASH DRIVE

Up to date data should be sent into the main office as often as possible (e.g., with the grocery plane). Insert a USB flash drive into an appropriate port on the netbook. Double click on MyComputer, which is found on the desktop of the netbook. Double click on Local Disk (D:) and then PendragonForms. Double click on the Data folder. The .csv files you have exported from Pendragon Forms Manager should be visible. The title should be formatted to include the area sampled and date (e.g., Afognak_River_20110614.csv). Highlight the most recent file (determined by the date) by single clicking. With the file highlighted, click on edit at the top of the window and then copy. It is important to click on copy, not cut.

Open up MyComputer and double click on the USB flash drive (often called "Removable Disk") found under the heading "Devices with Removable Storage". Click on edit at the top of the window, and then paste. The .csv file that was copied earlier will appear in the window indicating it was copied to the flash drive. Exit out of all windows and single click on the safely remove hardware button  on the bottom right corner of the desktop in the quick start menu. Click on "Safely remove USB Mass Storage Device." A pop-up will verify that it is now safe to remove the flash drive from the system.

POWERING THE NETBOOK AND RDA

1. The RDA can be charged with either the AC or DC powering options. It is the crew leader's responsibility to keep it charged.
2. The netbook can only be charged with the AC power adaptor, therefore plan accordingly for generator use. The charging light on the netbook is red when charging, and green when fully charged.
3. If there are powering problems, please contact the office immediately.

SCALE (GUM) CARDS:

Scale (gum) cards for sampling sockeye salmon are shown in Appendix A3. Be sure to fill out the gum cards <u>in pencil</u> as shown in Appendix A3.

<u>Species</u>

Write out completely (e.g., sockeye).

<u>Locality</u>

Escapement sampling: Include the weir site followed by "escapement" (e.g., Karluk River escapement).

Catch sampling: Include the area(s) where the fish were caught followed by "catch" (e.g., Uganik Bay catch).

<u>Statistical Area Code</u>

Fill in the appropriate digits from the operational plan of the statistical area being sampled. If catch samples are from a variety of statistical areas, be sure to list each statistical area and approximate percentage from each (if available).

-continued-

Sampling date

Escapement sampling: Fill in the date the fish were sampled.

Catch sampling: Fill in the date the fish were **caught**. The sample date, if different from the catch date, may be noted in "remarks."

Gear

Write out completely. If catch samples include multiple gear types, be sure to list each gear and approximate percentage from each (if available).

Collector(s)

Record the last name(s) or initials of each person collecting the sample.

Remarks

Record any pertinent information such as the number of scales per fish sampled, processing facility where the sampling took place, vessel/tender name, etc.

SAMPLING PROCEDURE

1. Enter background info, scale card number, and fish number into the RDA. Place the fish on its right side to sample the left side.
2. Determine the sex of the fish (escapement sampling only) and tap the Male, Female, or Unknown button on the RDA form.
3. Measure fish length in millimeters from mideye to tail fork (escapement sampling only; Appendix A5). Record the length directly into the RDA using the stylus. Measure all species of salmon to the nearest mm. When collecting length data, take care to ensure that each length corresponds to the appropriate scale mounted on the gum card, as length-at-age is evaluated for each sample. If not taking a fin clip for genetics or entering a tag color, tap the Skip Fin Clip and Tag Color button.
4. Remove the "preferred scale" from the fish by grasping the scale's exposed posterior edge with forceps and pulling free (Appendix A6). Remove all slime, grit, and skin from the scale (neoprene wristers work well for this). The preferred scale is located on the left side of the fish, two rows above the lateral line on the diagonal from the posterior insertion of the dorsal fin to the anterior insertion of the anal fin. If the preferred scale is missing, select a scale within the preferred area on the other side of the fish. If no scales are present in the preferred area on either side of the fish, sample a scale as close to the preferred area as possible. Do not select a scale located on the lateral line.
5. It is important to take care that scales adhere to the gum card, rough side up. Therefore, without turning the forceps over, clean, moisten, and mount the scale on the gum card with your thumb or forefinger. Exert just enough pressure to spread and smooth the scales directly over the number as shown in Appendix A6. The ridges on the sculptured side can be felt with a fingernail or forceps. Mount the scale with the anterior end oriented toward top of gum card. All scales should be correctly oriented on the card in the same direction (Appendix A7.).
6. Repeat steps 1 through 5 for up to 40 fish on each card.
7.

-continued-

8. When sampling at weirs you may use "Rite in the Rain"® books to record notes. **Notebooks should be returned to your supervisor at the end of the season**.

SOME NOTES AND REMINDERS

1. Connect the AC adaptor to the bottom of the communications cable to charge the RDA batteries. If using the DC charger, connect the charger into the communications port.
2. If a mistake is noticed immediately while sampling, the Previous button can be used to make changes without having to go to the review screen or alter the data on the netbook.
3. **Each length, sex, and scale must correspond to a single fish! It is the responsibility of the crew leader to be sure the data has been entered correctly.**
4. For greater efficiency in scale reading, mount scales with anterior end toward top of gum card A7.
5. **Never** put data from different dates onto one gum card, and always enter new background information. Even if only one scale is collected that day, enter new background information and begin a new gum card the next day.
6. Be careful when collecting and mounting scales in wet conditions (rain, high humidity, etc.). If glue dries on top of the scale, it often obscures scale features, resulting in an unreadable scale. In addition, scales frequently adhere poorly to a wet gum card. Protect the cards and keep them dry to avoid having to remount the scales on a new card. If the cards get wet, try to dry them in a protected area or remount if necessary. Remember, use a pencil when filling out gum cards, because ink will come off during pressing.
7. Responsibility for accuracy lies first with the primary data collector(s) and finally with the crew leader. Sloppy or incomplete data or gum cards will be returned to individual collectors for correction.
8. Ensure that all equipment is well kept. Electronics should be stored in a clean safe place. Dry off the RDA with a paper towel after sampling events. The RDA must be **completely** dry before transferring data to the netbook. RDA batteries must be charged to make certain sampling is not hampered. **It is the responsibility of the crew leader to make sure that all data is carefully examined and edited before returning it to their supervisor.**

TROUBLESHOOTING

Resetting the RDA

If problems are encountered with the RDA, a soft reset can be done without losing data. To perform a soft reset, hold the power and backlight button down together and release at the same time. If a soft reset does not work, the office should be contacted about other options for resetting.

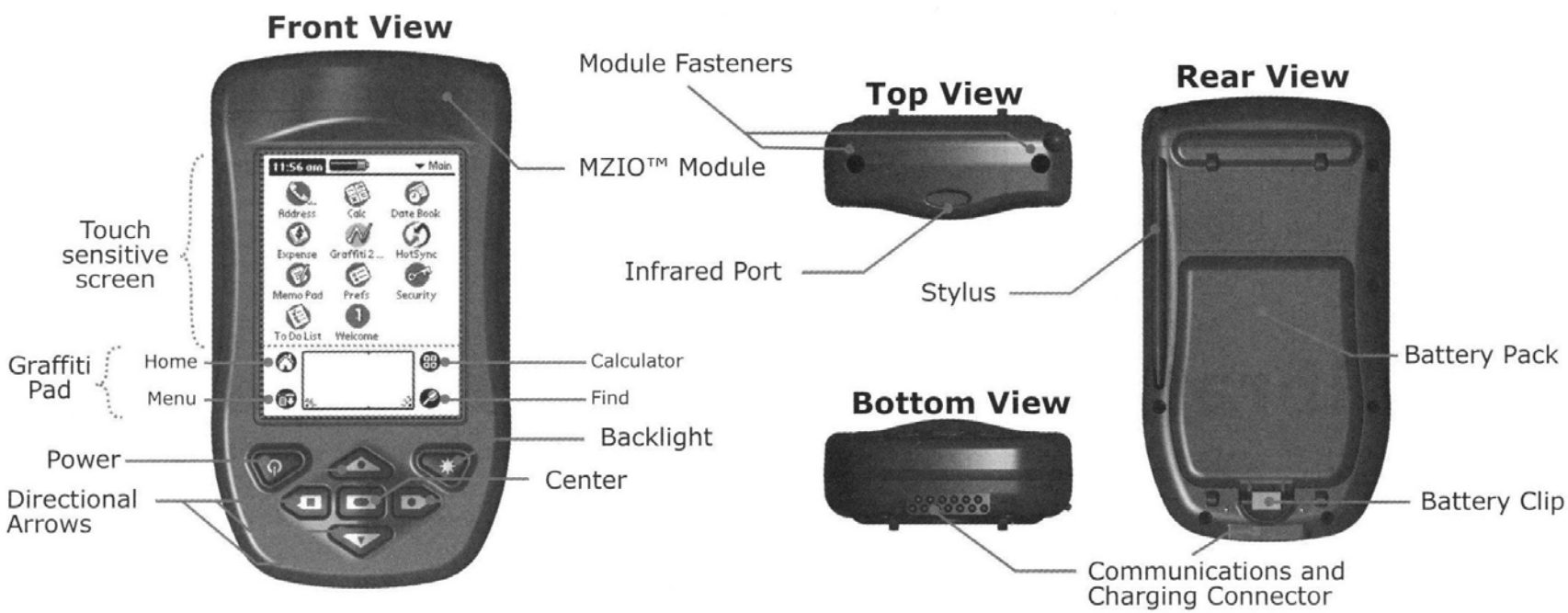
Press and release Power and Backlight button together

-continued-

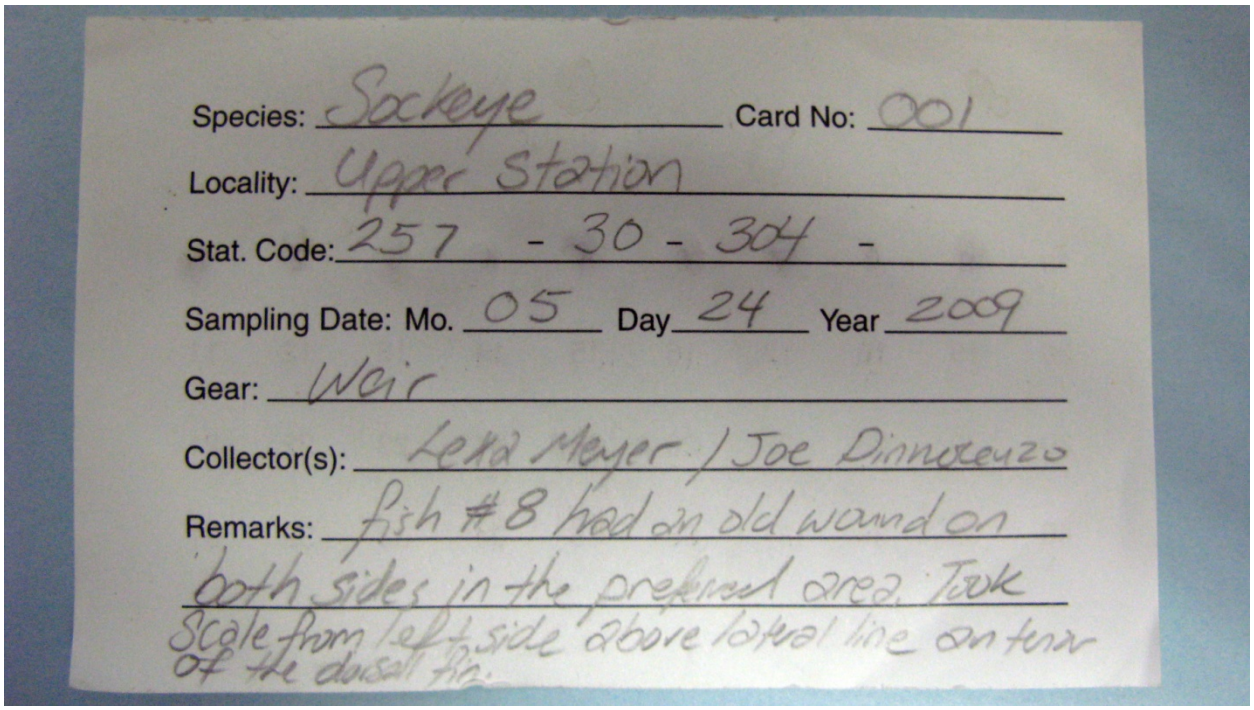
HotSync message includes "Exceeded user storage space limit of 500KB in form 'ASL_ #.##'

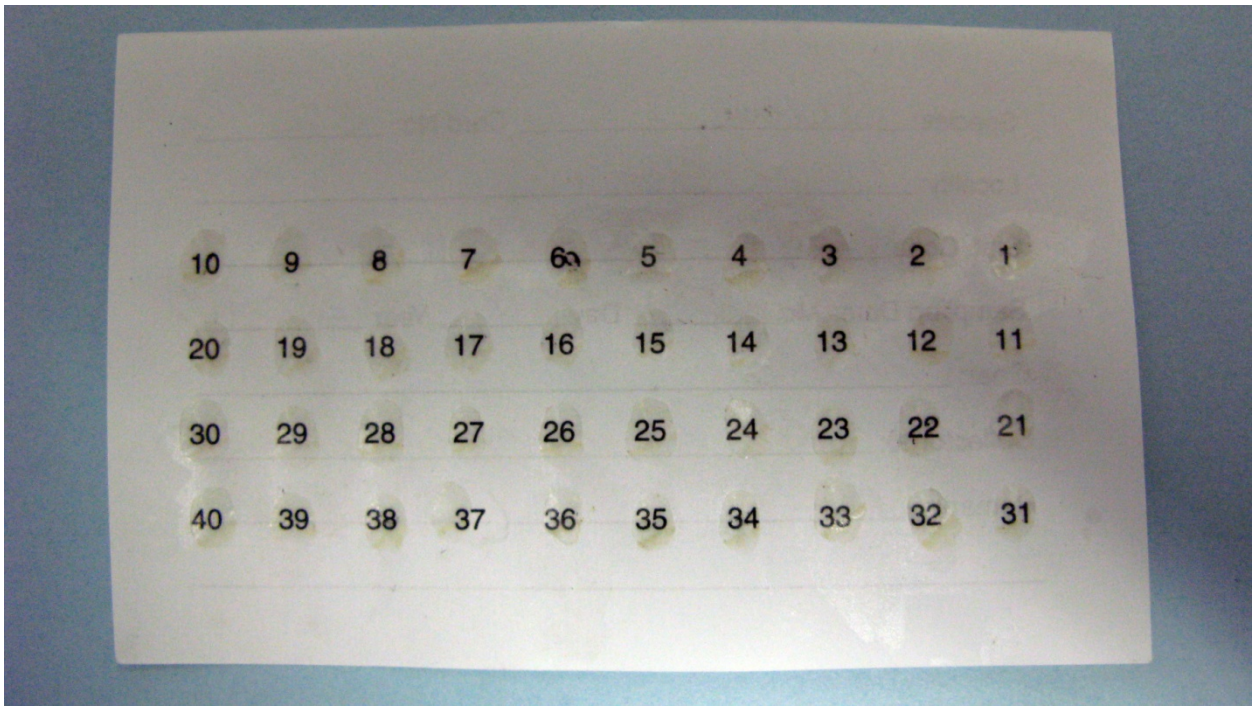
1. Open Pendragon Forms Manager
2. Under Form Function click on "Properties"
3. Click on "Advanced Properties"
4. Click on the "Synchronization Tab"
5. Change the Storage Limit (KB) to 5000 instead of 500.
6. Click "OK"
7. Under Form Functions Click on "Distribute"
8. Hotsync the RDA and the Netbook

Appendix A2.–Meazura MEZ1000 Rugged Digital Assistant (RDA).



Appendix A3.–Completed Scale (gum) Cards.

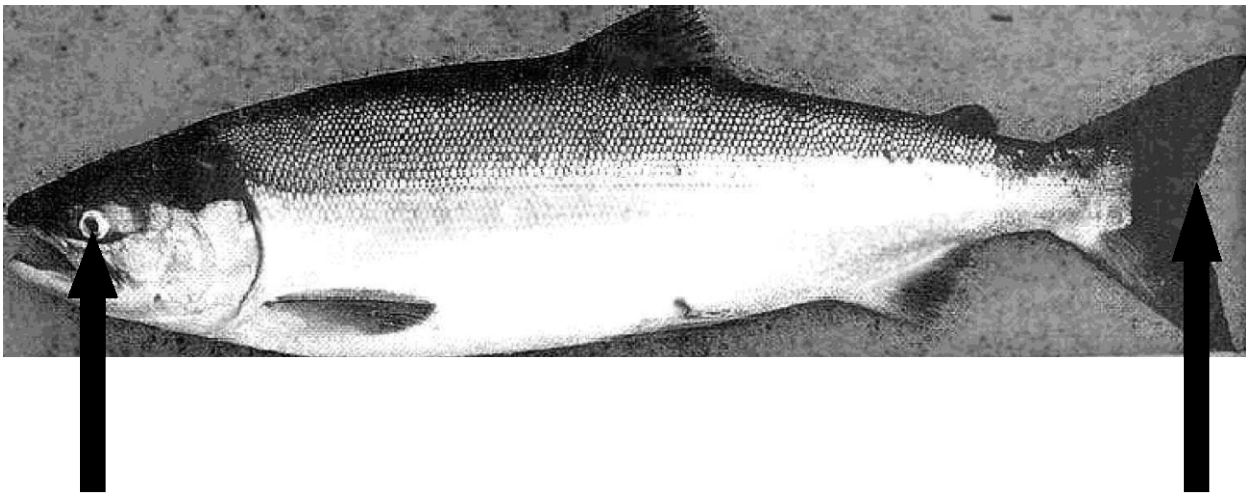

Species: Sockeye Card No: 001
Locality: Upper Station
Stat. Code: 257 - 30 - 304 -
Sampling Date: Mo. 05 Day 24 Year 2009
Gear: Weir
Collector(s): Lexa Meyer / Joe Dinnocenzo
Remarks: fish #8 had an old wand on both sides in the prefined area. Took scale from left side above lateral line on front of the dorsal fin.



Appendix A4.–Sampling weeks and associated calendar dates, 2014.

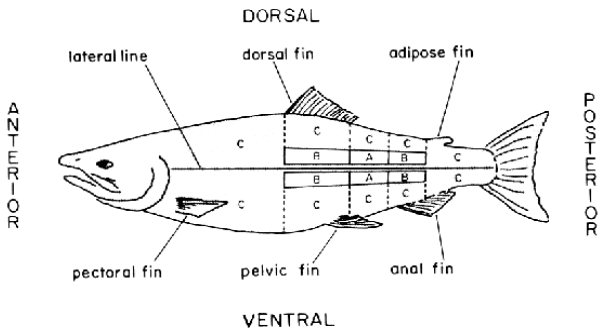
Week	Calendar Dates	Week	Calendar Dates
10	1-Mar – 7-Mar	28	5-Jul – 11-Jul
11	8-Mar – 14-Mar	29	12-Jul – 18-Jul
12	15-Mar – 21-Mar	30	19-Jul – 25-Jul
13	22-Mar – 28-Mar	31	26-Jul – 1-Aug
14	29-Mar – 4-Apr	32	2-Aug – 8-Aug
15	5-Apr – 11-Apr	33	9-Aug – 15-Aug
16	12-Apr – 18-Apr	34	16-Aug – 22-Aug
17	19-Apr – 25-Apr	35	23-Aug – 29-Aug
18	26-Apr – 2-May	36	30-Aug – 5-Sep
19	3-May – 9-May	37	6-Sep – 12-Sep
20	10-May – 16-May	38	13-Sep – 19-Sep
21	17-May – 23-May	39	20-Sep – 26-Sep
22	24-May – 30-May	40	27-Sep – 3-Oct
23	31-May – 6-Jun	41	4-Oct – 10-Oct
24	7-Jun – 13-Jun	42	11-Oct – 17-Oct
25	14-Jun – 20-Jun	43	18-Oct – 24-Oct
26	21-Jun – 27-Jun	44	25-Oct – 31-Oct
27	28-Jun – 4-Jul	45	1-Nov – 7-Nov

Appendix A5.–Measuring fish length from mid eye to tail fork.

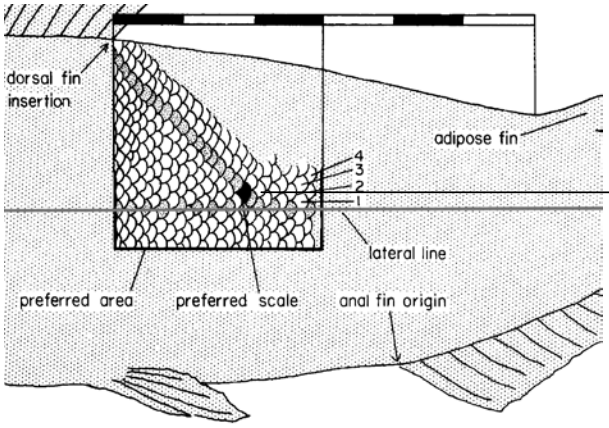


Adult salmon length is measured from mid eye to tail fork because the shape of the salmon's snout changes as it approaches sexual maturity. The procedure for measuring by this method is as follows.

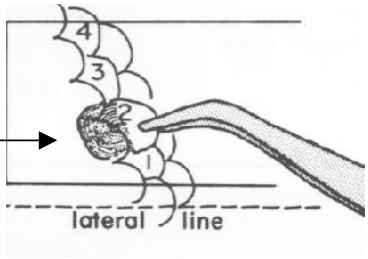
1. Place the salmon flat on its right side (on the measuring board) with its head to your left and the dorsal fin away from you.
2. Slide the fish in place so that the middle of the eye is in line with the edge of the meter stick and hold the head in place with your left hand.
3. Flatten and spread the tail against the board with your right hand.
4. Read and record the mideye to tail fork length to the nearest millimeter.



INPFC rated areas for scale removal. Area A is the preferred area. If scales on the left side are missing, try the right side. Area B is the second choice if there are no scales in Area A on either side of the fish. Area C designates non-preferred areas.

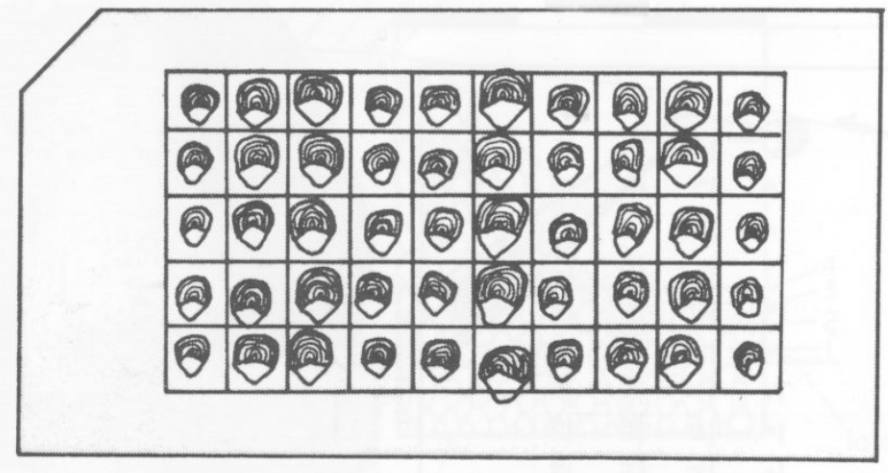


Do not turn scale over.

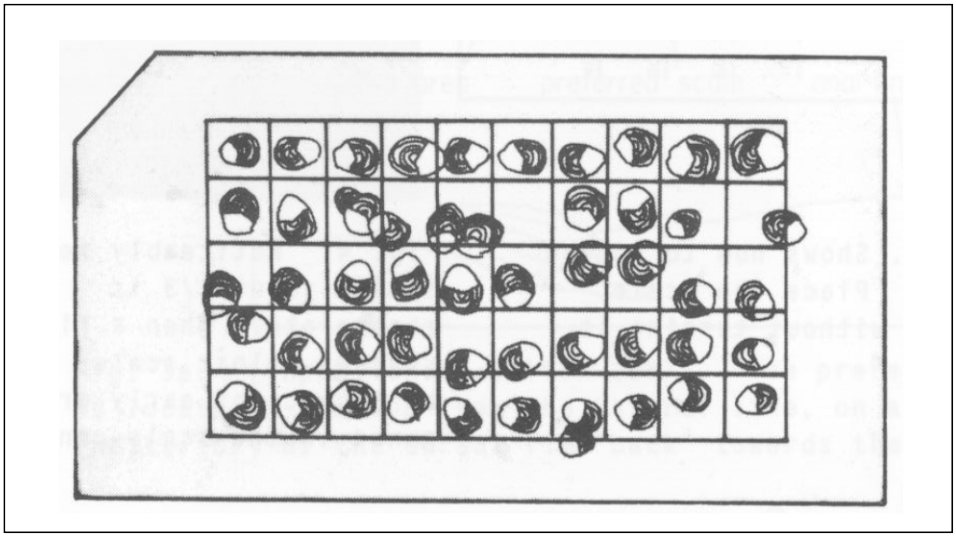


The preferred scale in this diagram is solid black. It is located 2 rows up from the lateral line, on a diagonal from the insertion (posterior) of the dorsal fin "back" toward the origin of the anal fin.

Appendix A7.–Scale orientation on the salmon scale gum card.



The scales are all correctly oriented on the card in the same direction, with the anterior portion of the scale pointed toward the top of the card and the posterior portion (which is that portion of the scale held in the forceps) pointed toward the bottom of the card.



The scales are incorrectly oriented in different directions. This increases the time spent to age samples.

APPENDIX B. GENETIC SAMPLING PROCEDURES

Appendix B1.–Procedure for collecting genetic tissue.

Non-lethal Sampling Finfish Tissue for DNA Analysis

ADF&G Gene Conservation Lab, Anchorage

I. General Information

We use axillary process samples from individual fish to determine the genetic characteristics and profile of a particular run or stock of fish. This is a non-lethal method of collecting tissue samples from adult fish for genetic analysis. The most important thing to remember in collecting samples is that only quality tissue samples give quality results. If sampling from carcasses: tissues need to be as "fresh" and as cold as possible and recently moribund; do not sample from fungal fins.

Sample preservative: Ethanol (ETOH) preserves tissues for later DNA extraction without having to store frozen tissues. Avoid extended contact with skin.

II. Sample procedure:

1. Tissue type: Axillary process; clip one axillary process from each fish.
2. Prior to sampling, fill the tubes half way with ETOH from the squirt bottle. Fill only the tubes that you will use for a particular sampling period.
3. To avoid any excess water or fish slime in the vial, wipe the axillary process dry prior to sampling. Using the dog toe nail clipper or scissors, clip off axillary process (1/2 -1" max) to fit into the cryovial.
4. Place axillary process into ETOH. The ethanol/tissue ratio should be slightly less than 3:1 to thoroughly soak the tissue in the buffer.
5. Top off tubes with ETOH and screw cap on securely. Invert tube twice to mix ETOH and tissue. After each sample, wipe the dog toe nail clippers or scissor blade so not to cross contaminate samples.
6. Data to record: Record each vial number to paired data information.

Discard remaining ethanol from the 500ml bottle before returning samples. Tissue samples must remain in 2ml ethanol after sampling. HAZ-MAT paperwork will be required for return shipment. Store vials containing tissues at cool or room temperature, away from heat in the white sample boxes provided. In the field: keep samples out of direct sun, rain and store capped vials in a dry, cool location. Freezing not required.

III. Supplies included with sampling kit:

1. Clippers – used for cutting the axillary process.
2. Cryovial – a small (2.0ml) plastic vial, pre-labeled.
3. Caps – to prevent evaporation of ETOH.
4. Cryovial box – neon box for holding cryovials while sampling.
5. Ethanol (ETOH) - in bulk Nalgene bottle.
6. Squirt bottle – to fill or "top off" each cryovial with ETOH. Squirt bottle not for ethanol storage.
7. Printout of sampling instructions.
8. Laminated "return address" label.

-continued-

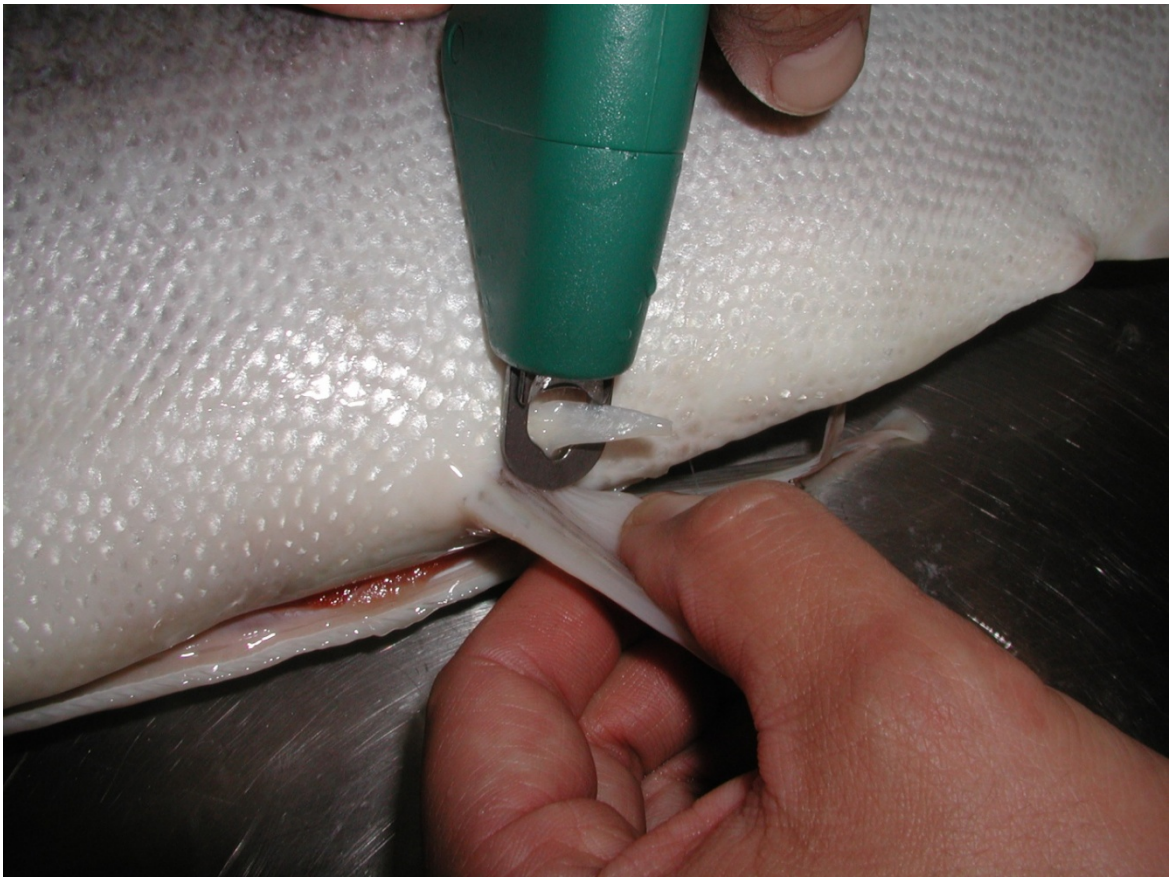
Shipping: HAZMAT paperwork is required for return shipment of these samples and is included in the kit.

Return shipping code: Use sampling date

Ship samples to:

ADF&G – Genetics
333 Raspberry Road
Anchorage, Alaska 99518

Lab staff: 907-267-2247
Judy Berger: 907-267-2175
Chris Habicht: 907-267-2169



What to do with the samples after they are done and refreshed:

1. If you are doing paired sampling, label all the vials at the beginning of the season, you may not have time to do it later.
2. Double check the sample information with the log book to ensure accuracy.
3. Make sure all the bottles have internal labels and external port and series numbers (e.g. Chignik 20=CG20).
4. Put into air approved boxes that sampling supplies arrived in.
5. Place an unopened bag of vermiculite on top of sample bottles so that the bottles are held in place but not buried in vermiculite.

Appendix B2.–Proposed sampling dates at Chignik River Weir, 2014.

June 2014

S	M	TU	W	TH	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

July 2014

S	M	TU	W	TH	F	S
		1	2	**3**	4	5
6	**7**	8	9	10	**11**	12
13	14	**15**	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Note: Sampling dates are represented in bold and can be adjusted inseason by management staff based on the first returns of the early-run; i.e., if the run appears earlier than usual, sampling may occur earlier in June, with intensive sampling occurring in late June. Conversely, late run timing will necessarily shift the greatest intensity of sampling later into the summer, perhaps with sampling occurring into August.

APPENDIX C. CHIGNIK SAMPLING FORM

Appendix C1.–The Chignik inseason genetic stock identification sampling form.

Chignik Inseason GSI Sampling Form					
Date	Sampling Location	Scale Card	Fish Numbers	Cryotube Numbers	Notes
6/29/2010	Chignik weir trap	15	1-35	421-456	None